

(PCT Article 36 and Rule 70)

Date of submission of the demand	Date of completion of this report
Name and mailing address of the IPEA/EP	Authorized officer
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INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.

PCT/EP2004/013219

Box No. I Basis of the report

1. With regard to the **language**, this report is based on the international application in the language in which it was filed, unless otherwise indicated under this item.
- ☐ This report is based on translations from the original language into the following language _____, which is the language of a translation furnished for the purposes of:
- ☐ international search (Rule 12.3 and 23.1(b))
- ☐ publication of the international application (Rule 12.4)
- ☐ international preliminary examination (Rule 55.2 and/or 55.3)
2. With regard to the **elements** of the international application, this report is based on *(replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report)*:
- ☐ the international application as originally filed/furnished
- ☒ the description:
- pages 1-13 as originally filed/furnished
- pages* _____ received by this Authority on _____
- pages* _____ received by this Authority on _____
- ☒ the claims:
- nos. _____ as originally filed/furnished
- nos.* _____ as amended (together with any statement) under Article 19
- nos.* 1-27 received by this Authority on 08.09.2005 with letter of 08.09.2005
- nos.* _____ received by this Authority on _____
- ☒ the drawings:
- sheets 1/6-6/6 as originally filed/furnished
- sheets* _____ received by this Authority on _____
- sheets* _____ received by this Authority on _____
- ☐ a sequence listing and/or any related table(s) – see Supplemental Box Relating to Sequence Listing.
3. ☐ The amendments have resulted in the cancellation of:
- ☐ the description, pages _____
- ☐ the claims, nos. _____
- ☐ the drawings, sheets/figs _____
- ☐ the sequence listing (*specify*): _____
- ☐ any table(s) related to sequence listing (*specify*): _____
4. ☐ This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).
- ☐ the description, pages _____
- ☐ the claims, nos. _____
- ☐ the drawings, sheets/figs _____
- ☐ the sequence listing (*specify*): _____
- ☐ any table(s) related to sequence listing (*specify*): _____

* If item 4 applies, some or all of those sheets may be marked "superseded."

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Box No. V	Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement		
1.	Statement		
	Novelty (N)	Claims <u>1-27</u>	YES
		Claims _____	NO
	Inventive step (IS)	Claims <u>1-27</u>	YES
		Claims _____	NO
	Industrial applicability (IA)	Claims <u>1-27</u>	YES
		Claims _____	NO
2.	Citations and explanations (Rule 70.7)		
	<p>1) The subject matter of claims 1-27 is novel (PCT Article 33(2)): the citations JP 9 001 508 A, JP 58 189 104 A, JP 1 093 506 A and WO 01/76366 A1 (D1 - D4 of the international search report (=ISR)) disclose antibacterial compositions containing quaternary ammonium compounds with alkali metal or ammonium borate salts without mentioning zinc borates.</p> <p>The remaining citations of the ISR do not disclose any combinations of borate salts with quaternary ammonium compounds.</p> <p>2) The subject matter of claims 1-27 involves an inventive step since the prior art hitherto neither discloses nor suggests that a combination of zinc borate and quaternary ammonium can be used successfully as a biocide for melamine formaldehyde or melamine-urea-formaldehyde resins. Only JP 7 329 265 A (D5 of the ISR) discloses the possible use of benzalconium chloride as a biocide for melamine resins, albeit only bonded with a laminar phosphate. EP 1 205 439 A1 (D6) discloses zinc borates with a special crystal size - for improved dispersion - as a flame-resistant means with biocidal properties for melamine resins, but contains no further</p>		

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	<p>details as to possible further biocides. EP 9 006 A1 (D7) discloses exclusively water-soluble alkali- or ammonium borates for melamine resins, and WO 03/009827 A1 discloses a series of possible biocides for melamine resins, in particular triclosan, ortho-phenylphenol, Zn-pyrrithion or -zeolite.</p> <p>On the basis of the available citations, it could not have been readily anticipated that the combination as per the invention would be easily processed in melamine resins and would have a long-lasting antibacterial effect, as is apparent from the examples. The requirements of PCT Article 33(3) are therefore met.</p> <p>3) Industrial applicability is evident (PCT Article 33(4)).</p>

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Box No. VII **Certain defects in the international application**

The following defects in the form or contents of the international application have been noted:

Contrary to the requirements of PCT Rule 5.1(a)(ii), the description neither cites D6 nor outlines the relevant prior art contained therein.

Contrary to PCT Rule 5.1(a)(iii), the description is not consistent with the amended claims.

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Box No. VIII Certain observations on the international application

The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made:

The ammonium compound as per claim 1 contains 3 C₁ - C₅ alkyl substituents (R₁, R₂ and R₃), but also includes benzalconium chloride (claim 11), which compound also has a long-chain alkyl group (see also the description, page 7, lines 15-20). Other, common quaternary ammonium compounds also normally contain two long-chain alkyl groups alongside two methyl substituents. The intended range of protection of the main claim is therefore unclear.

The intended scope of protection of the substance claims 1-3, 9-11, 14, 15, 17 and 18 is, moreover, unclear, because the additive is defined by features of the melamine resins treated (PCT Article 6).

Supplemental Box

In case the space in any of the preceding boxes is not sufficient.

Continuation of: I

The claims were restricted to an antibacterial additive for melamine formaldehyde or melamine-urea-formaldehyde resins with at least one borate salt and at least one quaternary ammonium compound, wherein the borate salt is at least a Zn borate salt as per the formula $Zn_aB_bO_c \cdot dH_2O$. The restriction is based on the original claim 4 with the formula $M = Zn$. The original description likewise discloses that the presence of a plurality of borate salts was intended (e.g. original claim 1 in conjunction with the description, page 6, lines 1-8). The subject matter of the amended claims 1, 4 and 5 is thus based on the application as originally filed.

The amended claims are thus admissible pursuant to PCT Article 19(2) and PCT Article 34(2)(b).